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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|------------------------------|------------------|
| 10/006,022 | 12/06/2001 | Steven Gianoulakis | AMAT/5970.05/CPES/CORE EN | 8411 |
| 32588 | 7590 | 03/23/2004 | EXAMINER KACKAR, RAM N | |
| APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050 | | | ART UNIT 1763 | PAPER NUMBER |

DATE MAILED: 03/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|--------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/006,022 | GIANOULAKIS ET AL. | |
| | Examiner | Art Unit | |
| | Ram N Kackar | 1763 | |

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. RCE dated 1/30/2004 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 4-5, 8-12, 14-15 and 18 rejected under 35 U.S.C. 102(b) as being anticipated by Kitagawa Kazuharu (JP 05136045).

Kitagawa Kazuharu discloses substrate receiving member (Fig 1-3 upper part of the bowl), a broadband actuator (7), an elongated stem portion to support the substrate holder (4) and vacuum means to hold the substrate, inherently vacuum channels and vacuum cavity. (Abstract and Fig 1). Since vibrations from the ultrasonic vibrator are applied to the substrate through hemispherical shaped bowl 3 it would be proper to call this as a reinforcement member.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1- 2, 4-5, 8-12, 14-15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gary S Selwyn (US 5849135) in view of Kitagawa Kazuharu (JP 05136045).

Selwyn discloses substrate receiving member (Fig 1-12), a broadband actuator (34), an elongated stem portion to support the substrate holder (28) and mechanical means to hold the substrate (Abstract). Selwyn discloses means to separate particles from wafer surface by vibration and to remove them by using plasma.

Selwyn does not disclose vacuum chucking and a hemispherical reinforcement member.

Kitagawa Kazuharu discloses a hemispherical shaped reinforcement member enclosing a vacuum cavity, having a first open end having a radius being larger than the other substantially closed end having a smaller radius (Fig 1 and abstract).

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to modify Selwyn by adding vacuum chucking instead of mechanical clamping so as to have reliable chucking for rotating the substrate.

6. Claims 3 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gary S Selwyn (US 5849135) in view of Kitagawa Kazuharu (JP 05136045) as applied to claims 1- 2, 4-5, 8-12, 14-15 and 18 and further in view of Jysky et al (US 3945613).

Selwyn discloses broadband actuator but does not disclose a longitudinal bore and a piston assembly with fluid inlet.

Piston type mechanical vibrators are well known as disclosed by Jysky et al who disclose a device to generate vibration having longitudinal bore, and using a piston and fluid inlet (Abstract and Fig 2 and 3).

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Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a simple and inexpensive vibration device of Jysky et al for the actuator of Selwyn.

7. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gary S Selwyn (US 5849135) in view of Kitagawa Kazuharu (JP 05136045) as applied to claims 1- 2, 4- 5, 8-12, 14-15 and 18 and further in view of Dyer et al (US 5800623).

Kitagawa Kazuharu does not disclose reinforcement ribs under the substrate support.

Dyer et al disclose a substrate support surface with ribs underneath (Fig 3 31, 32, 34 etc).

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to modify the substrate support of Kitagawa Kazuharu to have ribs to strengthen the support so as to avoid any damage due to deflection.

8. Claims 7 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gary S Selwyn (US 5849135) in view of Kitagawa Kazuharu (JP 05136045) as applied to claims 1- 2, 4- 5, 8-12, 14-15 and 18 and further in view of Byeong-Soo Kim (US 5927308).

Selwyn discloses substrate receiving member (Fig 1-12), a broadband actuator (34), an elongated stem portion to support the substrate holder (28) and mechanical means to hold the substrate (Abstract). Selwyn discloses means to separate particles from wafer surface by vibration and to remove them by using plasma.

Selwyn does not disclose air knife assembly to remove particles after vibration.

Byeong-Soo Kim discloses, a broad band actuator assembly (Fig 1-20 and 25) and air knife assembly (Fig 1-16) to blow away the particles.

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Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to have a simpler and less expensive air knife assembly to blow away particles after they are detached by vibration.

Response to Amendment

9. Applicant's arguments filed 1/30/2004 have been fully considered but they are not persuasive.

Applicant has argued that in none of the references cited discloses a hemispherical reinforcement member.

In view of the new grounds of rejection using Kitagawa Kazuharu this point has now become moot.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571 272 1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RK



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